AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in this application:

LISTING OF CLAIMS

1-96. (Canceled).

97. (Currently amended) A method for decreasing neuronal cell death associated with a neuropathy, wherein neuronal cell survival is mediated by ~~said neuropathy is characterized by altered~~ expression of N-CAM or L1 ~~isoform expression~~, comprising:

administering to a subject afflicted with said neuropathy a morphogen comprising a dimeric protein, the dimeric protein having one or more of the following:

(1) a conserved C-terminal six-cysteine skeleton at least 60% identical to residues 43-139 of SEQ ID NO: 5;

(2) a conserved C-terminal seven-cysteine skeleton at least 70% homologous to residues 38-139 of SEQ ID NO: 5;

(3) a conserved C-terminal six-cysteine skeleton at least 70% homologous to residues 43-139 of SEQ ID NO: 5; or

(4) an amino acid sequence of human OP-1, mouse OP-1, human OP-2, mouse OP-2, 60A, GDF-1, BMP2A, BMP2B, DPP, Vg1, Vgr-1, BMP3, BMP5, or BMP6;

wherein the morphogen (i) stimulates the production of said N-CAM or L1 ~~isoform~~ in said neuronal cell, and (ii) decreases neuronal cell death associated with said neuropathy.

98. (Canceled).

99. (Currently amended) A method for decreasing neuronal cell death associated with a chemical or physical injury, wherein neuronal cell survival is mediated by ~~said chemical or physical injury is characterized by altered~~ expression of N-CAM or L1 ~~isoform expression~~, comprising:

(a) administering to a subject having a neuron afflicted with a physical injury or who was exposed to a toxin that inhibits the proliferation and migration of neurons and interferes with cell adhesion, which exposure causes chemical injury; or

(b) prophylactically administering to a subject just prior to, or concomitant with, surgery that causes physical injury to a neuron,

a morphogen comprising a dimeric protein with:

(1) a conserved C-terminal six-cysteine skeleton at least 60% identical to residues 43-139 of SEQ ID NO: 5;

(2) a conserved C-terminal seven-cysteine skeleton at least 70% homologous to residues 38-139 of SEQ ID NO: 5;

(3) a conserved C-terminal six-cysteine skeleton at least 70% homologous to residues 43-139 of SEQ ID NO: 5; or

(4) an amino acid sequence of human OP-1, mouse OP-1, human OP-2, mouse OP-2, 60A, GDF-1, BMP2A, BMP2B, DPP, Vg1, Vgr-1, BMP3, BMP5, or BMP6;

wherein the chemical injury is caused by lead, ethanol, ammonia, organic solvents, formaldehyde, cigarette smoke, opiates, or glutamate, and wherein the morphogen (i) stimulates the production of said N-CAM or L1 ~~isoform~~ in said neuronal cell, and (ii) decreases neuronal cell death associated with said chemical or physical injury.

100-104. (Canceled).

105. (Previously Presented) The method of any of claims 97 and 99, wherein the morphogen is human OP-1.

106. (Previously Presented) The method of any of claims 97 and 99, wherein the morphogen is mouse OP-1.

107. (Previously Presented) The method of any of claims 97 and 99, wherein the morphogen is human OP-1, mouse OP-1, human OP-2, mouse OP-2, 60A, BMP2A, BMP2B, Vgl, Vgr-1, BMP5, or BMP6.

108. (Previously Presented) The method of any of claims 97 and 99, wherein the morphogen is human OP-1, mouse OP-1, human OP-2, mouse OP-2, BMP5, or BMP6.

109. (Previously Presented) The method of any of claims 97 and 99, wherein the morphogen is a dimeric protein having a conserved C-terminal six-cysteine skeleton at least 60% identical to residues 43-139 of SEQ ID NO: 5.

110. (Previously Presented) The method of any of claims 97 and 99, wherein the morphogen is a dimeric protein having a conserved C-terminal seven-cysteine skeleton at least 70% homologous to residues 38-139 of SEQ ID NO: 5.

111. (Previously Presented) The method of any of claims 97 and 99, wherein the morphogen is a dimeric protein having a conserved C-terminal six-cysteine skeleton at least 70% homologous to residues 43-139 of SEQ ID NO: 5.

112. (Currently amended) A method for decreasing neuronal cell death associated with a neuropathy, wherein neuronal cell survival is mediated by ~~said neuropathy is characterized by altered~~ expression of N-CAM or L1 ~~isoform expression~~, comprising:

contacting a neuronal cell damaged by said neuropathy with a morphogen comprising a dimeric protein, the dimeric protein having one or more of the following:

(1) a conserved C-terminal six-cysteine skeleton at least 60% identical to residues 43-139 of SEQ ID NO: 5;

(2) a conserved C-terminal seven-cysteine skeleton at least 70% homologous to residues 38-139 of SEQ ID NO: 5;

(3) a conserved C-terminal six-cysteine skeleton at least 70% homologous to residues 43-139 of SEQ ID NO: 5; or

(4) an amino acid sequence of human OP-1, mouse OP-1, human OP-2, mouse OP-2, 60A, GDF-1, BMP2A, BMP2B, DPP, Vg1, Vgr-1, BMP3, BMP5, or BMP6; and

wherein the morphogen (i) stimulates the production of said N-CAM or L1 ~~isoform~~ in said neuronal cell, and (ii) decreases neuronal cell death associated with said neuropathy.

113. (Currently amended) A method for decreasing neuronal cell death associated with a chemical or physical injury, wherein neuronal cell survival is mediated by ~~said chemical or~~

~~physical injury is characterized by altered~~ expression of N-CAM or L1 ~~isoform expression~~, comprising:

(a) contacting a neuronal cell damaged by a physical injury or exposure to a toxin that inhibits the proliferation and migration of neurons and interferes with cell adhesion, which exposure causes chemical injury; or

(b) prophylactically contacting a neuronal cell just prior to, or concomitant with, surgery that causes physical injury to the neuron;

with a morphogen comprising a dimeric protein with:

(1) a conserved C-terminal six-cysteine skeleton at least 60% identical to residues 43-139 of SEQ ID NO: 5;

(2) a conserved C-terminal seven-cysteine skeleton at least 70% homologous to residues 38-139 of SEQ ID NO: 5;

(3) a conserved C-terminal six-cysteine skeleton at least 70% homologous to residues 43-139 of SEQ ID NO: 5; or

(4) an amino acid sequence of human OP-1, mouse OP-1, human OP-2, mouse OP-2, 60A, GDF-1, BMP2A, BMP2B, DPP, Vg1, Vgr-1, BMP3, BMP5, or BMP6; and

wherein the chemical injury is caused by lead, ethanol, ammonia, organic solvents, formaldehyde, cigarette smoke, opiates, or glutamate, and wherein the morphogen (i) stimulates the production of said N-CAM or L1 ~~isoform~~ in said neuronal cell, and (ii) decreases neuronal cell death associated with said chemical or physical injury.

114. (Previously Presented) The method of any of claims 112 and 113, wherein the morphogen is human OP-1.

115. (Previously Presented) The method of any of claims 112 and 113, wherein the morphogen is mouse OP-1.

116. (Previously Presented) The method of any of claims 112 and 113, wherein the morphogen is human OP-1, mouse OP-1, human OP-2, mouse OP-2, 60A, BMP2A, BMP2B, Vgl, Vgr-1, BMP5, or BMP6.

117. (Previously Presented) The method of any of claims 112 and 113, wherein the morphogen is human OP-1, mouse OP-1, human OP-2, mouse OP-2, BMP5, or BMP6.

118. (Previously Presented) The method of any of claims 112 and 113, wherein the morphogen is a dimeric protein having a conserved C-terminal six-cysteine skeleton at least 60% identical to residues 43-139 of SEQ ID NO: 5.

119. (Previously Presented) The method of any of claims 112 and 113, wherein the morphogen is a dimeric protein having a conserved C-terminal seven-cysteine skeleton at least 70% homologous to residues 38-139 of SEQ ID NO: 5.

120. (Previously Presented) The method of any of claims 112 and 113, wherein the morphogen is a dimeric protein having a conserved C-terminal six-cysteine skeleton at least 70% homologous to residues 43-139 of SEQ ID NO: 5.